

JUN 30 2006

HEWLETT-PACKARD COMPANY
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PATENT APPLICATION

ATTORNEY DOCKET NO. 200205843-6

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): **Mohammad M. Samii**

Confirmation No.:

Application No.: **10/834,424**Examiner: **Lam S. Nguyen**Filing Date: **August 5, 2003**Group Art Unit: **2853**Title: **PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE**

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on April 26, 2006 and in follow-up to the Notice of Panel Decision mailed June 13, 2006. The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

- ☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month
\$120

☐ 2nd Month
\$450

☐ 3rd Month
\$1020

☐ 4th Month
\$1590

- ☐ The extension fee has already been filed in this application.

- ☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of \$ 500. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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- ☒ I hereby certify that this paper is being transmitted to the Patent and Trademark Office facsimile number (571)273-8300.

Date of facsimile: **June 30, 2006**Typed Name: **Jeff A. Holman**Signature: Jeff A. Holman

Respectfully submitted,

Mohammad M. Samii

By: Jeff A. Holman

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Rev 10/05 (ApBrie0)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE JUN 30 2006
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Mohammad M. Samii Examiner: Lam S. Nguyen
Serial No. 10/634,424 Group Art Unit: 2853
Filed: August 5, 2003 Docket No.: 200205843-6 (H301.272.102)
Due Date: July 13, 2006
Title: PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A
FLUID-EJECTION DEVICE

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Mall Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir/Madam:

This Appeal Brief is submitted in support of the Notice of Appeal filed on April 26, 2006, appealing the final rejection of claims 1-14 and 23 of the above-identified application as set forth in the Final Office Action mailed February 1, 2006.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 08-2025 in the amount of \$500.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. §41.20(b)(2). At any time during the pendency of this application, please charge any required fees or credit any overpayment to Deposit Account No. 08-2025.

Appellant respectfully requests consideration and reversal of the Examiner's rejection of pending claims 1-14 and 23.

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Appeal Brief to the Board of Patent Appeals and Interferences

Applicant: Mohammad M. Samii

Serial No.: 10/634,424

Filed: August 5, 2003

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Serial No.: 10/634,424

Filed: August 5, 2003

Docket No.: 200205843-6

Title: PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE**REAL PARTY IN INTEREST**

The real party in interest is Hewlett-Packard Development Company, LP having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present Appeal.

STATUS OF CLAIMS

In a Final Office Action mailed February 1, 2006, claims 1-14 and 23 were finally rejected. Claims 1-14 and 23 are pending in the application, and are the subject of the present Appeal.

STATUS OF AMENDMENTS

No amendments to the claims have been entered subsequent to the Final Office Action mailed February 1, 2006. A Response After Final was filed on March 3, 2006, but no amendments to the claims were proposed by Appellants or entered by the Examiner.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The Summary is set forth as an exemplary embodiment as the language corresponding to independent claims 1 and 23. Discussions about elements of claims 1 and 23 can be found at least at the cited locations in the specification and drawings.

The present invention, as claimed in independent claim 1, provides a printhead assembly including a plurality of ejection elements. Each of the ejection elements is configured to cause fluid to be ejected when the ejection element is activated. The printhead assembly includes a plurality of latches and a plurality of junction photosensors. Each junction photosensor is coupled to one of the ejection elements via one of the latches. Each

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junction photosensor is configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source. (See, e.g., specification at page 12, line 6 to page 15, line 23; Figures 2-8 and 10; reference numbers 126, 702, 710, and 807).

The present invention, as claimed in independent claim 23, provides an activation element of a fluid ejection device including an ejection element that causes fluid to be ejected from an associated nozzle chamber when activated. The activation element includes a junction photosensor coupled to the ejection element via a latch and a multi-transistor amplifier. The photosensor is configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source. (See, e.g., specification at page 12, line 6 to page 15, line 23; Figures 2-8 and 10; reference numbers 126, 700, 702, 706, 710, 807, 910).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- I. Claims 1-4, 10, 13, 14, and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maru et al., U.S. Patent No. 5,877,784 ("Maru") in view of Fujii et al., U.S. Patent No. 5,035,789 ("Fujii").
- II. Claims 5-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 4, and further in view of Millman et al., published article entitled, "Microelectronics," Second Edition, McGraw-Hill, Inc., 1987 ("Millman").
- III. Claims 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 1, and further in view of Sueoka et al., U.S. Patent No. 6,024,439 ("Sueoka").
- IV. Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 1, and further in view of Tamura et al., U.S. Patent No. 5,784,463 ("Tamura").

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Title: PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE**ARGUMENT****I. The Applicable Law**

The Examiner has the burden under 35 U.S.C. §103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Three criteria must be satisfied to establish a *prima facie* case of obviousness. First, the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would teach, suggest, or motivate one to modify a reference or to combine the teachings of multiple references. *Id.* Second, the prior art can be modified or combined only so long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Third, the prior art reference or combined prior art references must teach or suggest all of the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). These three criteria are also set forth in §706.02(j) of the M.P.E.P.

II. Rejection of Claims 1-4, 10, 13, 14, and 23 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii.

The Examiner rejected claims 1-4, 10, 13, 14, and 23 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii. Appellants submit that the Examiner has not established a *prima facie* case of obviousness of claims 1-4, 10, 13, 14, and 23.

A. Rejection of Claims 1-4, 10, 13, and 14 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii.

Independent claim 1 recites "a plurality of latches; and a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches". Maru does not teach or suggest a junction photosensor coupled to an ejection element via a latch, as recited in independent claim 1. Fujii also does not teach or suggest this limitation. The Examiner has not cited any reference that teaches or suggests a junction photosensor coupled to an ejection element via a latch as recited in independent claim 1. Maru and Fujii, either alone or in combination, do not teach or suggest each and every limitation of independent claim 1.

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The Examiner indicated that it would have been obvious to modify the printhead assembly disclosed in Maru by replacing the shift register 105 (Maru at Figure 11) with the photodiodes D (Fujii at Figure 2) disclosed in Fujii. (Office Action at para. no. 1, pages 2-3). The Federal Circuit has stated that "there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention." *Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 58 U.S.P.Q.2d 1286, 1293 (CAFC 2001) (emphasis added). There is no suggestion in this case to combine Maru and Fujii in a manner that would produce the claimed invention. There is no teaching or suggestion in Maru that it would be advantageous or desirable to replace the shift register 105 disclosed therein with photodiodes, such as the photodiodes D disclosed in Fujii. There is no teaching or suggestion in Fujii that it would be advantageous or desirable to replace a shift register with the photodiodes D disclosed therein.

The following statements by the Examiner appear to acknowledge that there is no teaching or suggestion in the cited references to combine them in the manner proposed by the Examiner:

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify Maru's printing apparatus to include appropriate optical elements so the printhead assembly can be in optical communication with other components rather than by wiring connection and to include a plurality of junction photosensors into the printhead assembly for receiving optical image data (sic) rather than the S/R [shift register] cells disclosed by Fujii et al. The motivation for doing so would have been well known in the art to avoid many problems due to wiring connection such as disconnection, short circuit, or attenuation (due to resistance of the wiring). *(The applicant please be advised that a suggestion/motivation need not be expressly stated in one or all of the references used to show obviousness, but can be from common knowledge and a common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference (In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)). (Office Action at para. no. 1, pages 3-4) (italics emphasis in Office Action) (bold emphasis added)*

The Examiner appears to argue above that optical communications are better than wired connections, and then this unsupported opinion apparently provides a basis to combine any arbitrary disclosure in the references in any arbitrary manner. This argument is clearly

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contrary to established precedent. There must be some teaching or suggestion in the prior art that would have led a person of ordinary skill to combine the references in a way that would produce the claimed invention. For example, in the cases of *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), the Federal Circuit reversed the decision of the Board of Patent Appeals and Interferences sustaining an Examiner's obviousness rejection. In the *Fine* case, the Court stated that "[t]he Board points to nothing in the cited references, either alone or in combination, suggesting or teaching Fine's invention." *Fine*, 5 USPQ2d at 1599 (emphasis added). The Court further stated that "Because neither Warnick nor Eads [prior art references], alone or in combination, suggests the claimed invention, the Board erred in affirming the Examiner's conclusion that it would have been obvious to substitute the Warnick nitric oxide detector for the Eads sulfur dioxide detector in the Eads system." *Id.*

Similarly, in the *Jones* case, the Court stated:

We see no such suggestion in Zorayan, which is directed to shampoo additives, nor in Wideman, which teaches that the amine used to make the claimed compound is a byproduct of the production of morpholine. Nor does the broad disclosure of Richter fill the gap, for the reasons discussed above.

Conspicuously missing from this record is any *evidence*, other than the PTO's speculation (if it be called evidence) that one of ordinary skill in the herbicidal art would have been motivated to make the modifications of the prior art salts necessary to arrive at the claimed 2-(2'-aminoethoxy) ethanol salt. See *Grabiak*, 769 F.2d at 731-32, 226 USPQ at 872 ("[I]n the case before us there must be adequate support in the prior art for the [prior art] ester/ [claimed] thioester change in structure, in order to complete the PTO's *prima facie* case and shift the burden of going forward to the applicant."); *In re Lahu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984) ("The prior art must provide one of ordinary skill in the art the motivation to make the proposed molecular modifications needed to arrive at the claimed compound.").

Jones, 21 USPQ2d at 1944 (emphasis added).

Thus, in both of these cases, the Federal Circuit found that there was no suggestion to combine in the references, and the Court reversed the Board's decision. Likewise, in the present case, the Examiner has pointed to nothing in the references that suggests the proposed combination, and has instead relied on the Examiner's unsupported speculation or opinion that optical communications are better than wired connections. The Examiner's argument

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ignores the fact that optical communications and wired connections each have their own unique strengths and weaknesses, and the Examiner's opinion that one is better than the other does not provide a basis for establishing a *prima facie* case of obviousness.

Furthermore, the proposed modification to Maru based on Fujii would change the principle of operation of the system disclosed in Maru. The MPEP states that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. MPEP §2143.01, citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). The MPEP also states that, in the *Ratti* case, "[t]he court reversed the rejection holding the 'suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.'" MPEP §2143.01, citing *In re Ratti*, 270 F.2d at 813, 123 USPQ at 352. The modification of the printing system disclosed in Maru proposed by the Examiner would require a substantial reconstruction of the printing system, and would change the principle of operation of the printing system.

In view of the above, independent claim 1 is not taught or suggested by the cited prior art, either alone, or in combination. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claim 1, and the rejection of claim 1 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 2-4, 10, 13, and 14 further limit patentably distinct claim 1, and are believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claims 2-4, 10, 13, and 14, and the rejection of claims 2-4, 10, 13, and 14 under 35 U.S.C. § 103(a) should be withdrawn.

B. Rejection of Claim 23 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii.

Independent claim 23 recites "a junction photosensor coupled to the ejection element via a latch and a multi-transistor amplifier". Maru does not teach or suggest a junction photosensor coupled to an ejection element via a latch and a multi-transistor amplifier, as

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recited in independent claim 23. Fujii also does not teach or suggest this limitation. Thus, Maru and Fujii, either alone or in combination, do not teach or suggest each and every limitation of independent claim 23. In addition, as addressed above with respect to independent claim 1, there is no suggestion to combine Maru and Fujii in the manner proposed by the Examiner.

In view of the above, in addition to the arguments set forth above with respect to claim 1, independent claim 23 is not taught or suggested by the cited prior art, either alone, or in combination. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claim 23, and the rejection of claim 23 under 35 U.S.C. § 103(a) should be withdrawn.

III. Rejection of Claims 5-8 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii and Millman.

The Examiner rejected claims 5-8 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 4, and further in view of Millman et al., publication entitled, "Microelectronics," Second Edition, McGraw-Hill, Inc., 1987 ("Millman"). As described above with respect to claim 1, Maru and Fujii, either alone, or in combination, do not teach or suggest "a plurality of latches; and a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches", as recited in independent claim 1. Millman also does not teach or suggest this limitation of claim 1.

In view of the above, dependent claims 5-8, which further limit patentably distinct claim 1, are believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claims 5-8, and the rejection of claims 5-8 under 35 U.S.C. § 103(a) should be withdrawn.

IV. Rejection of Claims 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii and Sueoka.

The Examiner rejected claims 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 1, and further in view of Sueoka

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et al., U.S. Patent No. 6,024,439 ("Sueoka"). As described above with respect to claim 1, Maru and Fujii, either alone, or in combination, do not teach or suggest "a plurality of latches; and a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches", as recited in independent claim 1. Sueoka also does not teach or suggest this limitation of claim 1.

In view of the above, dependent claims 11 and 12, which further limit patentably distinct claim 1, are believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claims 11 and 12, and the rejection of claims 11 and 12 under 35 U.S.C. § 103(a) should be withdrawn.

V. Rejection of Claim 9 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii and Tamura

The Examiner rejected claim 9 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Fujii as applied to claim 1, and further in view of Tamura et al., U.S. Patent No. 5,784,463 ("Tamura"). As described above with respect to claim 1, Maru and Fujii, either alone, or in combination, do not teach or suggest "a plurality of latches; and a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches", as recited in independent claim 1. Tamura also does not teach or suggest this limitation of claim 1.

In view of the above, dependent claim 9, which further limits patentably distinct claim 1, is believed to be allowable over the cited prior art. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of claim 9, and the rejection of claim 9 under 35 U.S.C. § 103(a) should be withdrawn.

CONCLUSION

For the above reasons, Appellants respectfully submit that the cited references neither anticipate nor render obvious claims of the pending Application. The pending claims distinguish over the cited references, and therefore, Appellants respectfully submit that the rejections must be withdrawn, and respectfully request the Examiner be reversed and claims 1-14 and 23 be allowed.

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Any inquiry regarding this Response should be directed to James R. McDaniel at Telephone No. (208) 396-4095, Facsimile No. (208) 396-3958 or Jeff A. Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

Hewlett-Packard Company
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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 30th day of June, 2006.

By: Jeff A. HolmenName: Jeff A. Holmen

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Title: PHOTOSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE**CLAIMS APPENDIX**

1.(Previously Presented) A printhead assembly comprising:

a plurality of ejection elements, each of the ejection elements configured to cause fluid to be ejected when the ejection element is activated;

a plurality of latches; and

a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements via one of the latches, each junction photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source.

2.(Original) The printhead assembly of claim 1, wherein the photosensors are photodiodes.

3.(Original) The printhead assembly of claim 1, wherein the photosensors are phototransistors.

4.(Original) The printhead assembly of claim 1, and further comprising a plurality of amplifiers, each photosensor being coupled to one of the ejection elements via one of the amplifiers.

5.(Original) The printhead assembly of claim 4, wherein each amplifier comprises a field effect transistor (FET).

6.(Original) The printhead assembly of claim 4, wherein each amplifier comprises a first and a second FET, each FET including a gate, a source, and a drain.

7.(Previously Presented) The printhead assembly of claim 6, wherein each amplifier further comprises one of the latches, and wherein the latch of each amplifier is coupled between one of the photosensors and the gate of the first FET of the amplifier, and wherein the first FET of each amplifier is configured to be turned on when the photosensor coupled to the first FET via the latch is illuminated by the light source.

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8.(Original) The printhead assembly of claim 7, wherein the second FET of each amplifier is coupled to the first FET of the amplifier and to one of the ejection elements, the second FET of each amplifier configured to provide a drive signal for activating the ejection element coupled to the second FET when the first FET of the amplifier is turned on.

9.(Original) The printhead assembly of claim 1, wherein the plurality of printhead fluid ejection elements are formed on a glass substrate.

10.(Original) The printhead assembly of claim 1, wherein the ejection elements are thermal inkjet elements.

11.(Original) The printhead assembly of claim 1, wherein the ejection elements are piezoelectric inkjet elements.

12.(Original) The printhead assembly of claim 1, wherein the plurality of ejection elements are organized into four page-wide-arrays of ejection elements.

13.(Original) The printhead assembly of claim 1, wherein the printhead assembly is a page-wide-array printhead assembly.

14.(Original) The printhead assembly of claim 1, wherein each photosensor coupled to one of the ejection elements is positioned substantially adjacent to the ejection element that it is coupled to.

15. – 22.(Cancelled)

23.(Previously Presented) An activation element of a fluid ejection device comprising:
an ejection element that causes fluid to be ejected from an associated nozzle chamber when activated; and

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a junction photosensor coupled to the ejection element via a latch and a multi-transistor amplifier, the photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source.

24. – 25. (Cancelled)

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EVIDENCE APPENDIX

None.

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RELATED PROCEEDINGS APPENDIX

None.